HVAC LEGEND

HVAC ABBREVIATIONS

LVR	LOUVER
MOD	MOTORIZED DAMPER
CONT.	CONTINUATION
DN	DOWN

PIPING SYSTEMS

SYMBOL	DESCRIPTION
---FOR---	FUEL OIL RETURN
---FOS---	FUEL OIL SUPPLY
----------	VENT
	DIRECTION OF FLOW
	BALL VALVE
	BUTTERFLY VALVE
	CAPPED PIPE
	BOTTOM CONNECTION
	PIPE DOWN
	PIPE UP
	RETURN AIR OR EXHAUST
	SUPPLY AIR OUTLET
T	THERMOSTAT

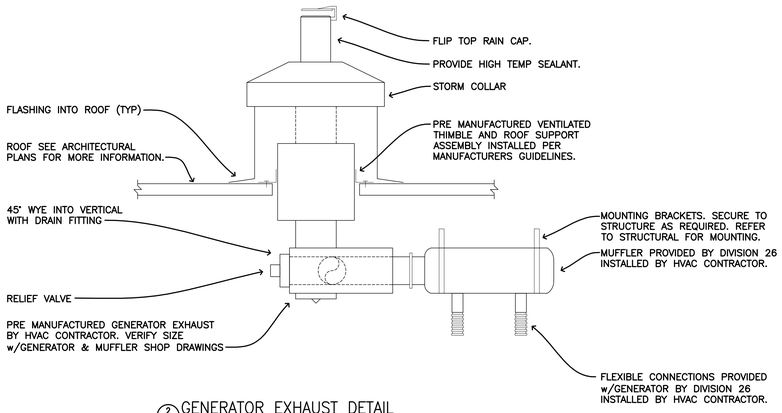
PIPING SYSTEMS

SYMBOL	DESCRIPTION
	MOTOR OPERATED DAMPER

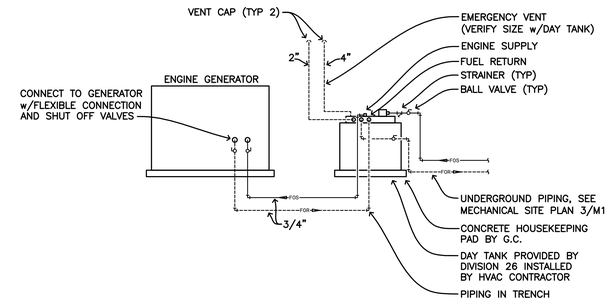
LOUVER SCHEDULE

LOUVER ID	WIDTH (INCH)	HEIGHT (INCH)	DEPTH (INCH)	FRAME TYPE	CFM	FREE AREA (SQ. FT)	AIR PRESSURE DROP	AIR VELOCITY FT/MIN	MANUFACTURER & MODEL	NOTES
LVR-1	SEE NOTE #4	4	CHANNEL	60150	109.87	0.047"	547	-	1,2,4	
LVR-2	SEE NOTE #4	4	CHANNEL	50800	131.25	0.024	387	-	1,2,3,4	
LVR-3	SEE NOTE #4	4	CHANNEL	14245	36.8	0.024	387	-	1,2,3,4	

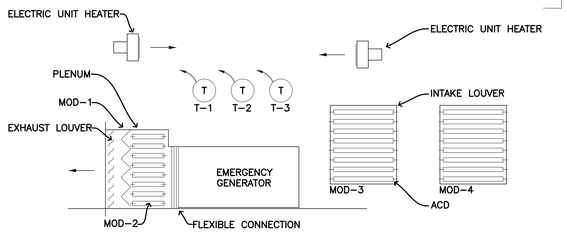
1) PROVIDE CUSTOM COLOR CHART. COLOR SELECTED BY ARCHITECT.
2) CONTRACTOR TO FIELD VERIFY SIZE PRIOR TO ORDERING LOUVER.
3) 689 FT/MIN BEGINNING POINT OF WATER PENETRATION.
4) REFER TO ARCHITECTURAL DRAWINGS FOR LOUVER DIMENSIONS.



2/M1 GENERATOR EXHAUST DETAIL
SCALE: NOT-TO-SCALE

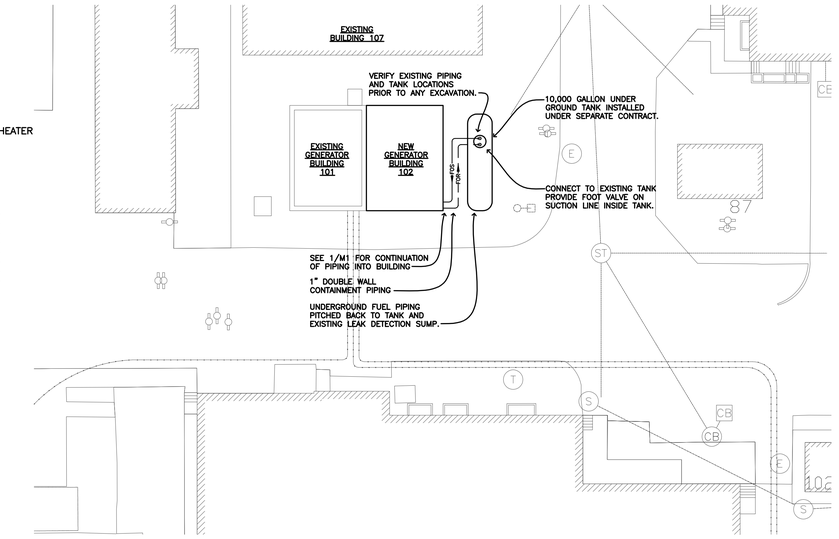


4/M1 DAYTANK INSTALLATION WITH TANK BELOW GRADE DETAIL
SCALE: NOT-TO-SCALE

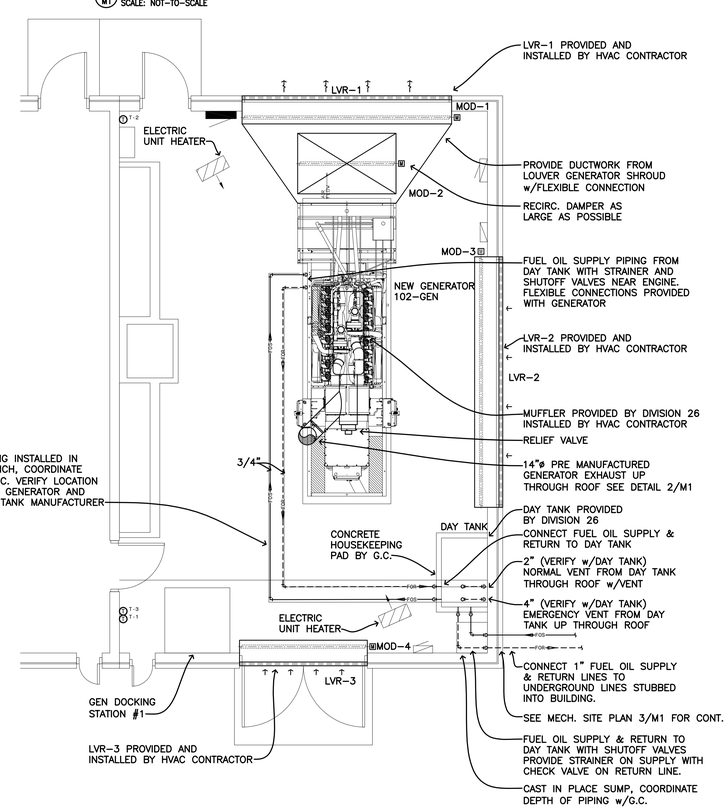


NOTES:
1. EMERGENCY GENERATOR SHALL BE INTERLOCKED WITH MOD-3 & MOD-4. WHEN EMERGENCY GENERATOR IS ENERGIZED MOD-3 & MOD-4 SHALL OPEN. WHEN EMERGENCY IS DE-ENERGIZED MOD-3 & MOD-4 SHALL CLOSE.
2. POWER OPERATED, OPPOSED BLADE, DAMPERS MOD-1 & MOD-2 SHALL BE INTERLOCKED WITH ROOM THERMOSTAT T1 SET AT 60°F [16°C]. ON A RISE IN ROOM TEMPERATURE ABOVE 60°F [16°C] MOD-1 SHALL MODULATE OPEN & MOD-2 SHALL MODULATE CLOSED. ON A DROP IN ROOM TEMPERATURE BELOW 60°F [16°C], MOD-1 SHALL MODULATE CLOSED & MOD-2 SHALL MODULATE OPEN.
3. ELECTRIC UNIT HEATERS UH-1 & UH-2 (TWO STAGE ELECTRIC HEAT PER UNIT HEATER) SHALL BE INTERLOCKED WITH ROOM THERMOSTAT T2 & T3 SET AT 45°F [7.2°C]. ON A DROP IN ROOM TEMPERATURE BELOW 43°F [6.1°C] ELECTRIC UNIT HEATERS SHALL BE ENERGIZED & ON A RISE IN ROOM TEMPERATURE ABOVE 47°F [8.3°C].

5/M1 EMERGENCY GENERATOR ROOM CONTROLS
SCALE: NOT-TO-SCALE



3/M1 GENERATOR BUILDING – MECHANICAL SITE PLAN
SCALE: 1" = 20'-0"
0' 10' 20' 40



1/M1 GENERATOR BUILDING – MECHANICAL
SCALE: 1/4" = 1'-0"
0' 2' 4' 8'

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Revisions	Date

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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINTED NAME: KATHLEEN J. NORDNESS
SIGNATURE:
DATE: 3/30/2012 REG. NO. 25714

Drawing Title	GENERATOR BUILDING - MECHANICAL
Approved Project Director	
Project Title	Building 102 Building 4 Generator Replacement
Location	St. Cloud VA Health Care System
Date	March 30, 2012
Checked	TMB
Drawn	MJB
Project Number	656-11-211
Building Number	102
Drawing Number	M1
Dwg.	6 of 12

VAMC SAINT CLOUD MN

VA FORM 08-6231

ELECTRICAL SYMBOLS LEGEND

LIGHTING

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
A, a	CEILING SURFACE MOUNTED LIGHT FIXTURE, CAPITAL LETTER INDICATES FIXTURE TYPE, SMALL LETTER INDICATES SWITCHING.	
K	WALL MOUNTED INCAND. OR H.I.D. LIGHT FIXTURE, SURFACE OR, RECESSED MOUNTED	
	SURFACE FLUORESCENT	
HPC	PHOTO CELL	9 FOOT
$	SINGLE POLE (HORSEPOWER RATED WHEN USED AS MOTOR DISCONNECT)	48 INCHES
$3	3–WAY	48 INCHES
$4	4–WAY	48 INCHES

POWER

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
	DUPLEX RECEPTACLE ("C" INDICATES EMERGENCY CRITICAL BRANCH POWER)	18 INCHES
	DOUBLE DUPLEX RECEPTACLE ("C" INDICATES EMERGENCY CRITICAL BRANCH POWER)	18 INCHES
G	GFCI TYPE RECEPTACLE	18 INCHES
T	DRY TYPE TRANSFORMER	
HTE	THERMOSTAT – PROVIDE BY DIVISION 16	48 INCHES
HT	THERMOSTAT – FURNISHED BY DIVISION 15, INSTALLED BY DIVISION 16	48 INCHES
1	MOTOR (NUMBER REFERS TO MOTOR AND EQUIPMENT SCHEDULE SEE SCHEDULE FOR WIRING AND CONTROLLER REQUIREMENTS)	
	SURFACE LIGHTING AND APPLIANCE PANELBOARD	
	SPECIAL EQUIPMENT CABINET AS NOTED	
HCB	ENCLOSED MOLDED CASE CIRCUIT BREAKER	
HV	VARIABLE FREQUENCY CONTROLLER WITH DISCONNECT	
H	NON–FUSED DISCONNECT	
HF	FUSED DISCONNECT	
	MAGNETIC STARTER	
H	COMBINATION STARTER–DISCONNECT	

MISC/ABBREVATIONS

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
J	CEILING–MOUNTED JUNCTION BOX	
	DASHED LINES INDICATE EXISTING FIXTURES, DEVICES, OR EQUIPMENT	
	HASH MARKS INDICATE ITEM NOTED TO BE REMOVED	
	CONDUIT CONCEALED IN WALL OR CEILING, QUANTITY OF CONDUCTORS NOT SHOWN, PROVIDE AS REQUIRED FOR DEVICE/CIRCUIT NUMBERS SHOWN.	
	CONDUIT CONCEALED IN FLOOR	
UGE	UNDERGROUND CONDUIT AT 24 INCHES MINIMUM. INSTALL CONDUIT 30 INCHES MINIMUM BELOW PAVED AREAS.	
L1–2,4,6 #10	HOME RUN TO PANELBOARD, QUANTITY OF CONDUCTORS REQUIRED NOT INDICATED, PROVIDE QUANTITY AS REQUIRED FOR CIRCUIT NUMBERS SHOWN, SWITCHING ARRANGEMENT, OR NUMBER OF HOME RUNS SHOWN. '#10' INDICATES WIRE SIZE, NO NUMBERS INDICATES #12, 3/4 INCH CONDUIT MINIMUM.	
1	NOTE IDENTIFICATION	
A	AMPERE	
C	CONDUIT	
GR	GROUND	
PH	PHASE	
W	WIRE	
WP	WEATHERPROOF	

NOTES:
1. THIS IS A COMPREHENSIVE SYMBOL SCHEDULE. NOT ALL SYMBOLS ARE APPLICABLE TO THESE DRAWINGS.
2. MOUNTING HEIGHT IS TO THE CENTER OF DEVICE UNLESS OTHERWISE INDICATED.
3. FOR DEVICES SHOWN AS 48 INCHES MOUNTING HEIGHT, WHEN INSTALLED IN MASONRY BLOCK WALLS, MOUNTING AT 48 INCHES TO THE TOP OF THE OUTLET BOX IS ACCEPTABLE.

PANELBOARD LOAD SCHEDULE

PANEL: 102EQ | MAIN: MCB 150A | VOLTS: 208Y/120, 3 PH., 4W. | ENCLOSURE: NEMA 1 | LOCATION: GEN BUILDING
RATING: 225 AMP | AIC RATING: 22,000 | MOUNTING: SURFACE | FED FROM: 102–ATS

CKT #	TRIP AMPS	POLE	LOAD IN VOLT–AMPERES LIGHTING	RECPT	MOTORS	KITCHEN	HEAT/AC	LOAD DESCRIPTION	PH	LOAD DESCRIPTION	HEAT/AC	KITCHEN	MOTORS	RECPT	LIGHTING	TRIP AMPS	POLE	CKT #
1	20	1	465					INTERIOR LIGHTS	A	EXTERIOR LIGHTS					60	20	1	2
3	20	1		600				EAST&SOUTH WALL	B	WEST WALL				400		20	1	4
5	20	1			1800			BATTERY CHARGER	C	DAYTANK			1000			20	1	6
7	30*				2500			BLOCK	A	DAMPER			500			20	1	8
9		2			2500			HEATER	B	UNIT	5000					60		10
11	20	1			200			METERING	C	HEATER	5000							12
13	20	1						SPARE	A		5000						3	14
15	20	1						SPARE	B	UNIT	5000					60		16
17	20	1						SPARE	C	HEATER	5000							18
19	20	1						SPARE	A		5000						3	20
21	20	1						SPARE	B	SPARE						20	1	22
23	30	1						SPARE	C	SPARE						20	1	24

LOAD CALCULATIONS

LOAD TYPE	VA / PHASE A	B	C	TOTAL VA	DEMAND FACTOR	DIVERSIFIED LOAD
LIGHTING	525	0	0	525	1.00	525
RECEPTACLES	0	1000	0	1000	0.50	500
MOTORS	3000	2500	3000	8500	0.90	7650
KITCHEN EQUIP.	0	0	0	0	0.65	0
HEAT / AC	10000	10000	10000	30000	0.90	27000
TOTAL AMPS:		99		TOTAL VA:		35675

NOTES:
1. CONFIRM BREAKER SIZE WITH GENERATOR SUPPLIER

LUMINAIRE SCHEDULE

TYPE	MANUFACTURERS	CATALOG INFORMATION	FIXTURE DESCRIPTION	LAMP DATA NO.	LAMP DATA TYPE	BALLAST DATA NO.	BALLAST DATA TYPE	INPUT WATTS	VOLTAGE	MOUNTING	REMARKS
A	LITHONIA OR EQUAL	AF1O SERIES	1' X 4' INDUSTRIAL FIXTURE. 10% UPLIGHT, HEAVY GAUGE COLD ROLLED STEEL CONSTRUCTION. BAKED WHITE ENAMEL FINISH. WIRE GUARD. PROVIDE CHAIN HANGERS.	2	28W T8 SP41	1	ELECTRONIC	48	120	SUSPENDED	PROVIDE EMERGENCY BALLASTS WHERE NOTED ON DRAWINGS. BODINE B50ST OR EQUAL.
B	RAB OR EQUAL	LPACK SERIES	10W, 50,000 HOUR LED WALL PACK FIXTURE. WEATHERPROOF SILICONE GASKETING. DIE CAST ALUMINUM HOUSING. 1800 INITIAL LUMENS. CHIP AND FADE RESISTANT POLYESTER POWER COAT FINISH, BRONZE. INTEGRAL PHOTOCELL. COOL WHITE LED COLOR TEMPERATURE.	INCLUDED	LED	1	LED DRIVER	13.2	120	WALL	

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Revisions: | Date

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PRINTED NAME: MICHAEL A. BERGER
SIGNATURE:
DATE: 3/30/2012 REG. NO. 40294

Drawing Title: ELECTRICAL SYMBOLS LEGEND; LUMINAIRE SCHEDULE; PANEL SCHEDULE
Approved Project Director:
Project Title: Building 102 Building 4 Generator Replacement
Location: St. Cloud VA Health Care System
Date: March 30, 2012 | Checked: MAB | Drawn: TLP
Project Number: 656-11-211
Building Number: 102
Drawing Number: E1
Dwg. 7 of 12

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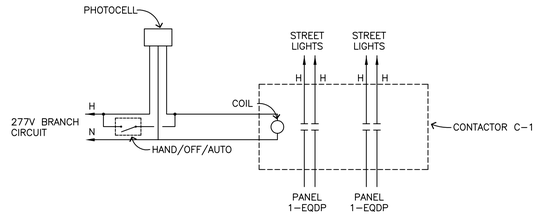
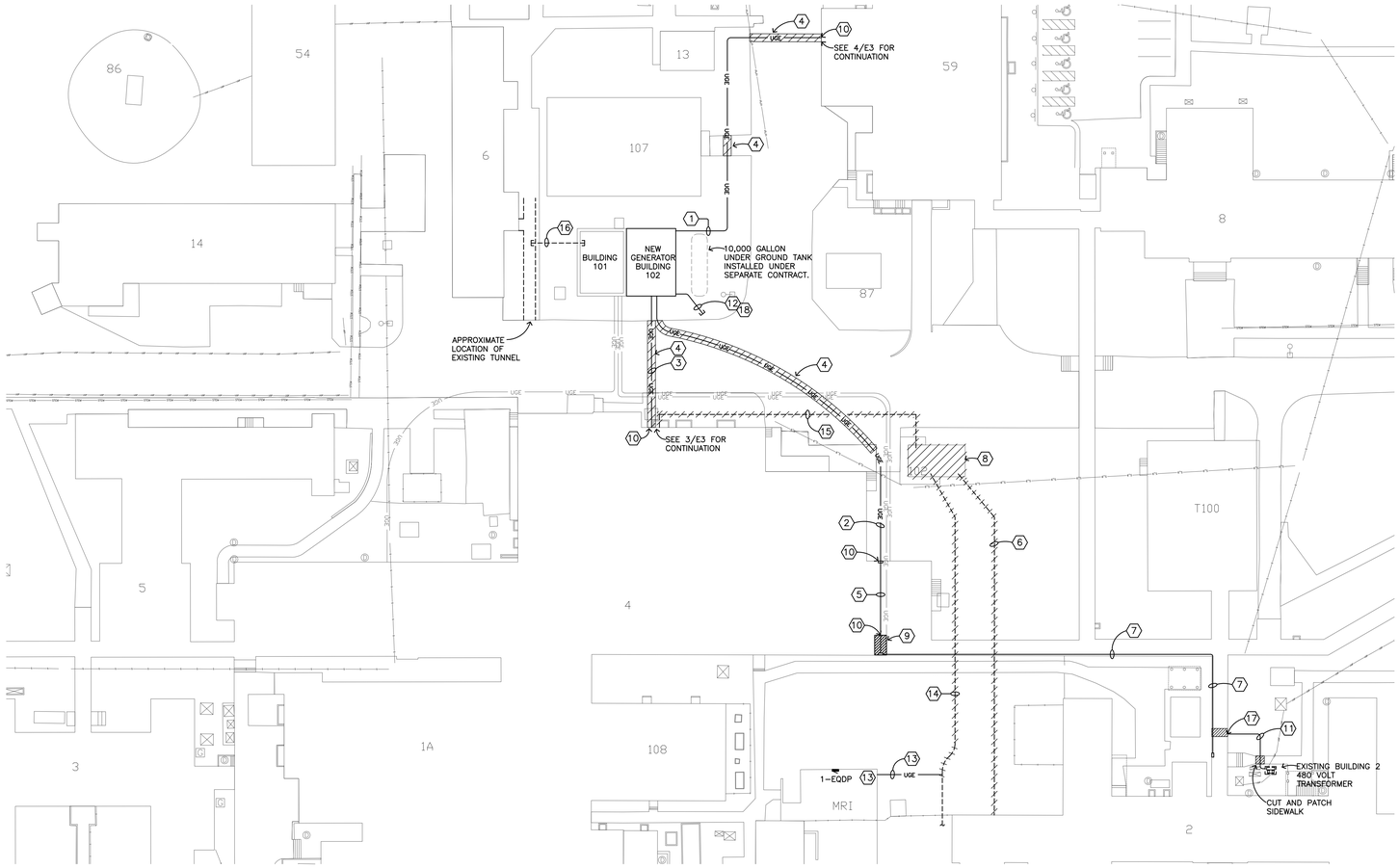


2/E2 LIGHTING CONTROL DETAIL
NO SCALE



1/E2 SITE PLAN – ELECTRICAL
1" = 30'-0"
0' 15' 30' 60'

PLAN NOTES:

1. ONLY HALF OF ROADWAYS MAY BE BLOCKED FOR UNDERGROUND EXCAVATION AND CONDUIT INSTALLATION. INSTALL CONDUIT UNDER HALF OF ROADWAY, REPAIR ROADWAY FOR TRAFFIC, THEN COMPLETE THE OTHER HALF.
2. NO OPEN TRENCHES AR ALLOWED BEYOND STANDARD WORKING HOURS.

PLAN NOTES:

1. EMERGENCY FEEDER TO BUILDING 59 (LAUNDRY).
2. EMERGENCY FEEDERS TO BUILDING 2, ONE FOR ELEVATOR AND CHILLER AND ONE FOR LIFE SAFETY BRANCH AND ONE FOR THE CRITICAL BRANCHES.
3. EMERGENCY FEEDERS TO BUILDING 4, ONE FOR EQUIPMENT (KITCHEN) AND ONE FOR LIFE SAFETY.
4. CUT AND PATCH ASPHALT TO INSTALL FEEDERS.
5. ROUTE THROUGH THE BASEMENT OF BUILDING 4. ROUTE OVERHEAD THROUGH DRY STORAGE AREA. VERIFY EXACT ROUTE WITH VA COR.
6. REMOVE THE CONDUCTORS FROM BUILDING 102 TO BUILDING 2, SEE 1/E5. ABANDON CONDUIT BELOW GRADE. REMOVE CONDUIT WHERE IT PENETRATES THE TUNNEL ON NORTH AND SOUTH SIDES AND PATCH OPENINGS. REMOVE ALL CONDUIT WITHIN BUILDING 2 AND PATCH ALL PENETRATIONS.
7. ROUTE IN TUNNEL. SEE 2/E3. ROUTE LOW ON WALL. VERIFY EXACT ROUTE WITH VA COR.
8. REMOVE EXISTING GENERATOR AND DEMOLISH EXISTING FEEDERS FOR BUILDING 102. SEE 5/E3 AND 1/E5.
9. CUT AND PATCH FLOOR OF TUNNEL. ROUTE FEEDERS UNDERFLOOR OF TUNNEL AND UP TO A NEW PULL BOX ON OPPOSITE WALL OF TUNNEL.
10. PROVIDE LINK-SEAL TO SEAL PIPE PENETRATIONS INTO EXTERIOR FOUNDATION WALLS. PROVIDE PULL BOX WHERE CONDUITS PENETRATE FOUNDATION WALL. VERIFY WALL PENETRATION LOCATIONS WITH EXISTING CONDUITS AND THE VA COR.
11. ROUTE NEW SERVICE FEEDER TO BUILDING 2 480 VOLT PANEL 2EQ UNDERGROUND AND PENETRATE THE TUNNEL WALL OPPOSITE NEW DISCONNECT 2-DS4.
12. STUB OUT (4) 3 INCH CONDUITS, (1) 1 1/2 INCH CONDUIT AND (1) 1 INCH CONDUIT (START SIGNAL) FOR EMERGENCY FEEDERS TO FUTURE KITCHEN BUILDING.
13. ROUTE EXISTING 480 VOLT STREET LIGHTING CIRCUITS, 2#2+#8 GROUND IN A 1 1/4 INCH CONDUIT AND 2#8+#8 GROUND IN A 1 INCH CONDUIT TO PANEL 1-EQDP IN THE NEW MRI EXPANSION. PROVIDE (2) 20/2 BREAKERS IN PANEL 1-EQDP AND PROVIDE (1) 30A, 4 POLE CONTACTOR WITH H/O/A AND A PHOTOCELL ON THE NORTH SIDE OF THE BUILDING TO CONTROL THE CONTACTOR. SEE DETAIL 2/E2.
14. REMOVE STREET LIGHT CONDUCTORS FROM BUILDING 102 TO INTERCEPT POINT FOR THE REROUTE TO 1-EQDP. CONDUCTORS MAY BE PULLED BACK AND SALVAGED. REMOVE ALL CONDUIT THROUGH TUNNEL AND ABOVE GRADE AND SEAL ALL PENETRATIONS.
15. REMOVE FEEDER FROM BUILDING 102 TO 4-ATS-EB AND 4-ATS-ES. REMOVE ALL CONDUCTORS, ANY CONDUIT ABOVE GRADE OR IN THE BASEMENT OF BUILDING 4, ABANDON CONDUIT BELOW GRADE AND SEAL ALL PENETRATIONS. SEE 1/E5.
16. UTILIZE EXISTING SPARE 2 INCH CONDUIT FROM BUILDING 101 TO THE UTILITY TUNNEL FOR DATA CABLES TO BUILDING 6 (NOTE 11, E3). PROVIDE PULL BOXES ON BOTH ENDS.
17. CUT AND PATCH THE TUNNEL FLOOR TO INSTALL THE CONDUITS TO 2-DS4 ON THE OPPOSITE WALL. PROVIDE LINK SEAL TO SEAL CONDUITS WHERE THEY PENETRATE TUNNEL FOUNDATION WALL. SEE 2/E3.
18. STUB OUT (2) 3 INCH CONDUITS, (1) 1 1/2 INCH CONDUIT AND (1) 1 INCH CONDUIT FOR EMERGENCY POWER FOR FUTURE IT BUILDING.

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Revisions	Date

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PRINTED NAME: MICHAEL A. BERGER
SIGNATURE:
DATE: 3/30/2012 REG. NO. 40294

Drawing Title	SITE PLAN - ELECTRICAL
Approved: Project Director	
Project Title	Building 102 Building 4 Generator Replacement
Location	St. Cloud VA Health Care System
Date	March 30, 2012
Checked	MAB
Drawn	TLP
Project Number	656-11-211
Building Number	102
Drawing Number	E2
Dwg.	8 of 12

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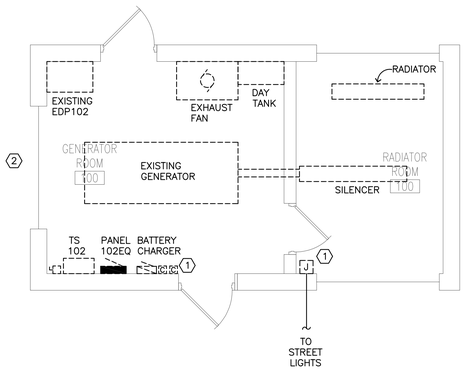
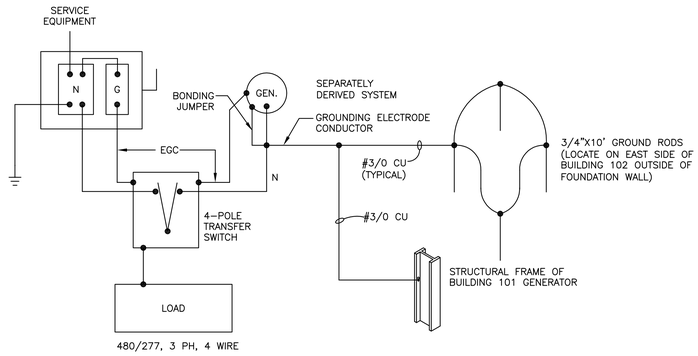


5 E3 BUILDING 102 FIRST FLOOR – ELECTRICAL DEMOLITION
1/4"=1'-0"
0' 2' 4' 8'

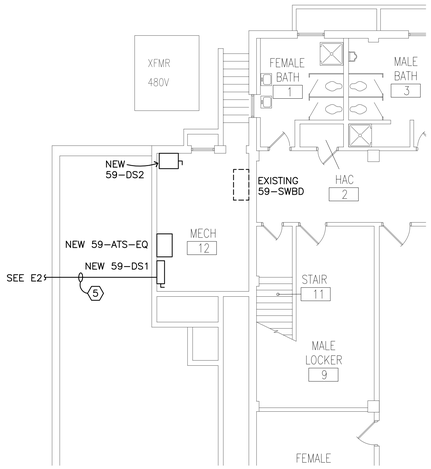
6 E3 TRANSFORMER MOUNTING DETAIL
NO SCALE



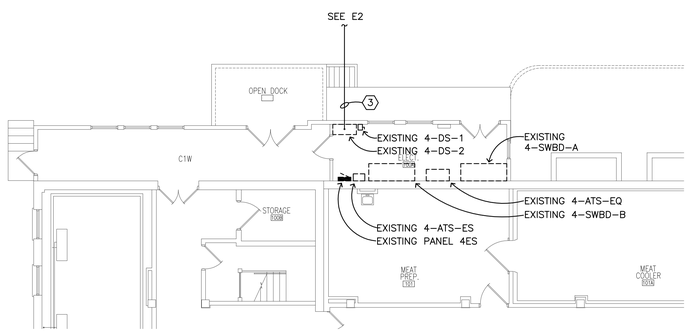
7 E3 TYPICAL ISOLATED GROUND LOOP PREVENTION DETAIL
NO SCALE

PLAN NOTES:

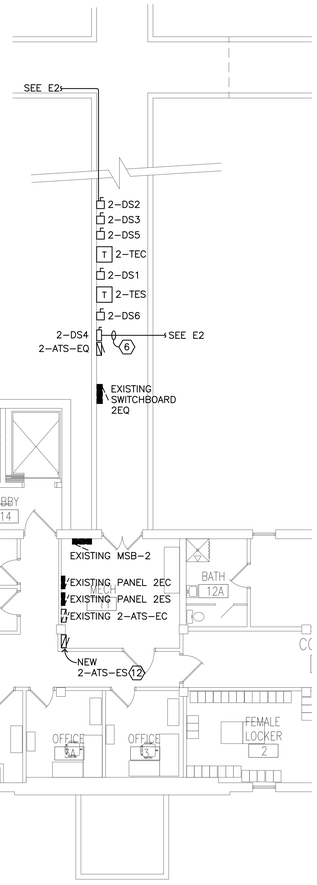
1. REROUTE (2) EXISTING 480V, 1 PHASE STREET LIGHT CIRCUITS TO NEW MRI BUILDING, PANEL 1– EQDP, SEE E2.
2. BUILDING 102 TO BE DEMOLISHED. REMOVE AND DISCONNECT GENERATOR AND ELECTRICAL EQUIPMENT. SEE 1/E5 FOR EXISTING ONE LINE DIAGRAM.
3. ROUTE NEW FEEDERS TO DS–1 AND DS–2 FROM NEW 102–LSB THROUGH THE LOWER LEVEL VAULT. REUSE THE EXISTING PULL BOXES.
4. ROUTE THE EXISTING 1200 AMP FEEDER FOR THE BUILDING 4 HVAC EQUIPMENT TO 102–MSB. THE EXISTING CONDUCTORS ARE LONG ENOUGH TO DISCONNECT FROM 101–MSB AND ROUTE TO A NEW JUNCTION BOX ABOVE 102–MSB SPLICE CONDUCTORS AND EXTEND TO THE 1200 AMP BREAKER IN 102–MSB.
5. BORE CONDUITS UNDER THE FIRST FLOOR SLAB AND INTO ROOM 12. CONDUITS TO BE SEALED WITH LINK SEAL FITTINGS ON BOTH FOUNDATION WALLS.
6. CUT AND PATCH THE FLOOR OF THE TUNNEL TO ROUTE THE FEEDER UP INTO THE BOTTOM OF 2–DS4. SEAL FOUNDATION WALL PENETRATION.
7. LOCATION FOR GENERATOR ANNUNCIATOR PANEL. PROVIDE A GENERATOR 'RUN' AND OVERALL GENERATOR 'ALARM' OUTPUT CONTACT FOR MONITORING BY THE CAMPUS BAS. SEE GENERATOR SPECIFICATIONS FOR ADDITIONAL CONTACT POINTS TO BE MONITORED BY THE CAMPUS BUILDING AUTOMATION SYSTEM.
8. PROVIDE A JUNCTION BOX TO ROUTE ALL CONDUITS AND WIRING FROM THE ATS'S FOR 'START' SIGNALS. ROUTE (1) 1 INCH CONDUIT FROM THIS JUNCTION BOX TO GENERATOR CONTROL PANEL FOR 'START' SIGNAL WIRING.
9. PROVIDE 120 VOLT CONNECTION TO DAY TANK PUMPS.
10. PROVIDE 120 VOLT CONNECTION TO MOTORIZED DAMPERS. DAMPER TO HAVE MULTIPLE CONNECTIONS. COORDINATE WITH MECHANICAL CONTRACTOR.
11. PROVIDE TELEPHONE ENCLOSURE EQUAL TO CIRCA 1880 ENA/NSC SERIES WITH 25 PAIR SURGE SUPPRESSION MODULE HAVING 41365 PROTECTION MODULES. PROVIDE (6) CAT5e CABLES, OUTDOOR RATED, IN A 2 INCH CONDUIT TO BUILDING #6.
12. REMOVE EXISTING DISCONNECTS 2–DS–1 AND DS–EQ AND THE ASSOCIATED CONDUITS TO INSTALL NEW 2–ATS–ES. SEE 1/E5.
13. PROVIDE BODINE B50ST OR EQUAL EMERGENCY BALLASTS IN FIXTURES NOTED.
14. PROVIDE DATA CABLE, CAT5e TO TELEPHONE ENCLOSURE IN A 3/4 INCH CONDUIT.
15. PROVIDE 15000 WATT, 208 VOLT, 3 PHASE ELECTRIC SUSPENDED UNIT EQUAL TO QMARK MODEL MUH158 OR EQUAL. PROVIDE 24 VOLT CONTROL TRANSFORMER AND RELAY FOR CONTROLS BY BAS SYSTEM. PROVIDE CEILING MOUNTED BRACKET.
16. TRANSFER SWITCH ANNUNCIATOR. SEE SECTION 26 36 23 FOR REQUIREMENTS.



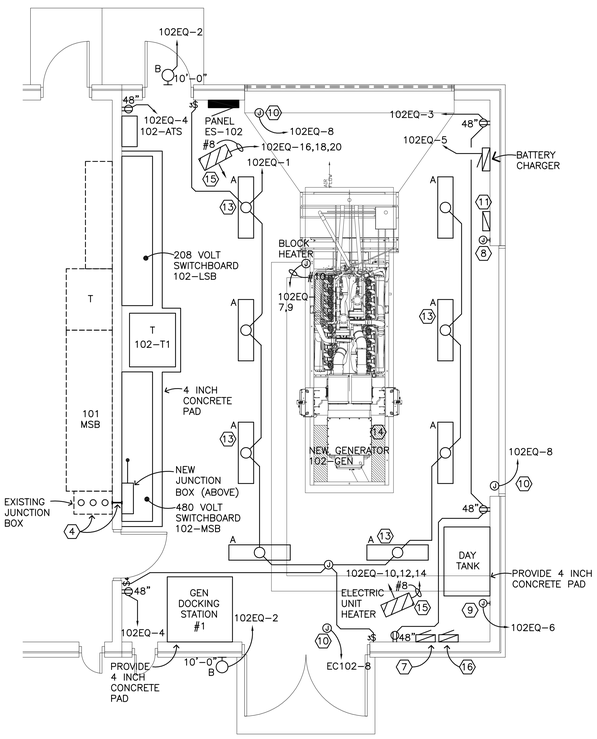
4 E3 BUILDING 59 BASEMENT – ELECTRICAL
1/8"=1'-0"
0' 4' 8' 16'



3 E3 BUILDING 4 FIRST FLOOR – ELECTRICAL
1/8"=1'-0"
0' 4' 8' 16'



2 E3 BUILDING 2 BASEMENT – ELECTRICAL
1/8"=1'-0"
0' 4' 8' 16'



1 E3 GENERATOR BUILDING – ELECTRICAL
1/4"=1'-0"
0' 2' 4' 8'

100% CDs - FOR CONSTRUCTION

Revisions	Date

CONSULTANTS:

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PRINTED NAME: MICHAEL A. BERGER
SIGNATURE:
DATE: 3/30/2012 REG. NO. 40294

Drawing Title: GENERATOR BUILDING - ELECTRICAL
BUILDING 2, 4, 59 AND 102 - ELECTRICAL

Approved: Project Director

Project Title: Building 102
Building 4 Generator Replacement

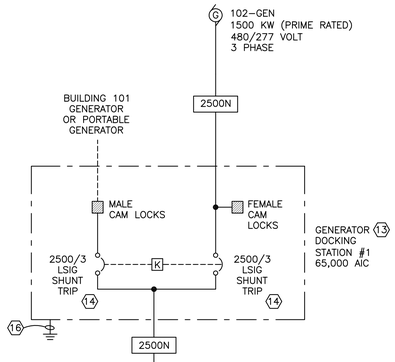
Location: St. Cloud VA Health Care System

Date: March 30, 2012 | Checked: MAB | Drawn: TLP

Project Number: 656-11-211
Building Number: 102
Drawing Number: E3
Dwg. 9 of 12

VAMC SAINT CLOUD MN

VA FORM 08-6231



FEEDER SCHEDULE

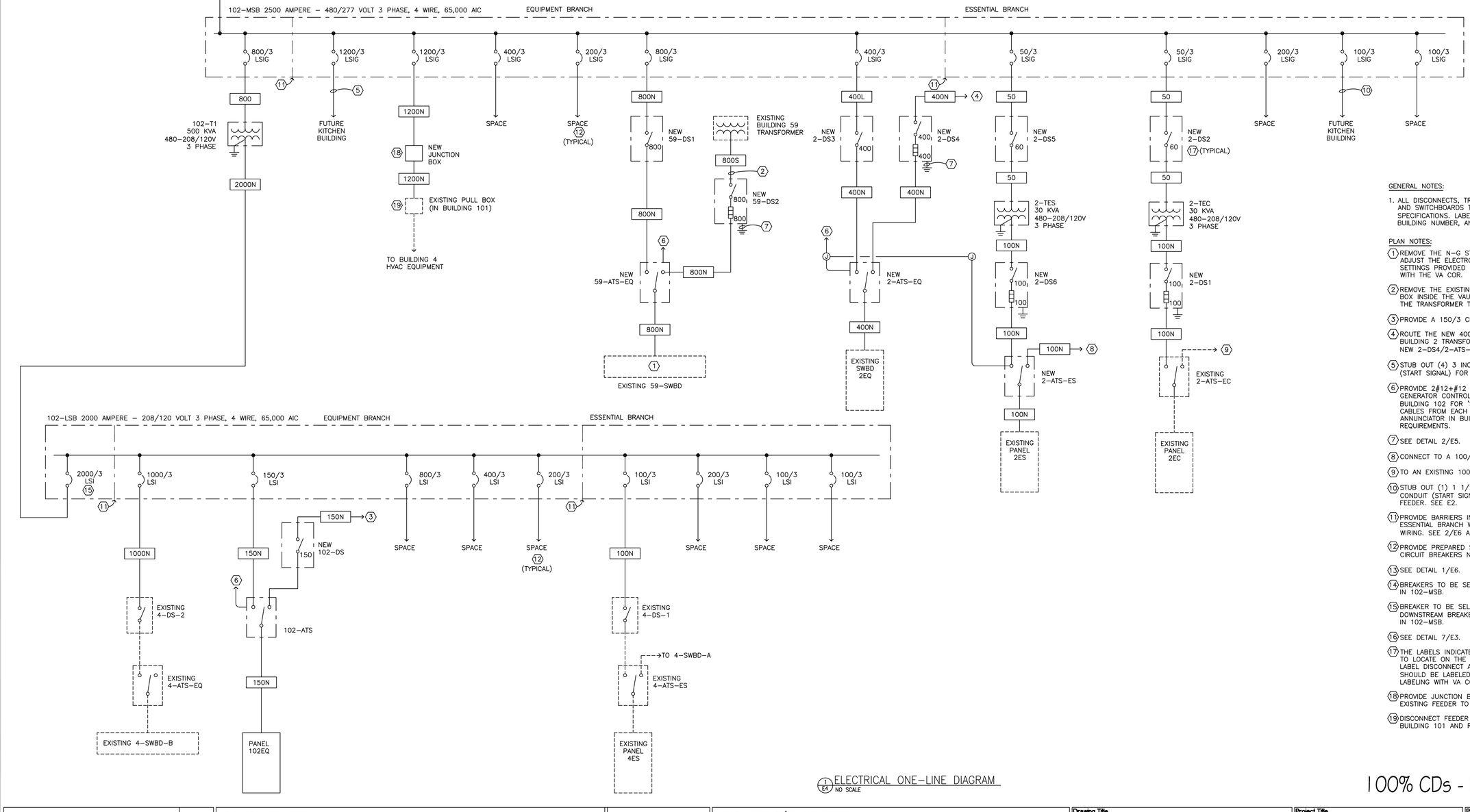
FEEDER NUMBER	AMPERE RATING	PHASE CONDUCTORS PER CONDUIT		NEUTRAL CONDUCTOR SIZE		GROUND CONDUCTOR SIZE	CONDUIT SIZE	NUMBER OF PARALLEL SETS	REMARKS
		QUANTITY	SIZE	QUANTITY	SIZE				
2500N	2500	3	500 KCMIL	1	500 KCMIL	350 KCMIL	4"	7	
2000N	2000	3	600 KCMIL	1	600 KCMIL	350 KCMIL	4"	5	
800	800	3	300 KCMIL			1/0 AWG	3"	3	
800S	800	3	300 KCMIL	1	300 KCMIL		3"	3	
800N	800	3	300 KCMIL	1	300 KCMIL	1/0 AWG	3"	3	
1000N	1000	3	400 KCMIL	1	400 KCMIL	3/0 AWG	3"	3	
400N	400	3	3/0 AWG	1	3/0 AWG	2 AWG	2"	2	
400L	400	3	250 KCMIL	1	250 KCMIL	2 AWG	2-1/2"	2	
100N	100	3	2 AWG	1	2 AWG	8 AWG	1-1/2"	1	
50	50	3	3 AWG	1	3 AWG	8 AWG	1-1/2"	1	
150N	150	3	1/0 AWG	1	1/0 AWG	6 AWG	2"	1	
1200N	1200	3	350 KCMIL	1	350 KCMIL	3/0 AWG	3"	4	

TRANSFER SWITCH SCHEDULE

NUMBER	TYPE	TRANSITION TYPE	VOLTAGE	SWITCHED POLES	AMPERAGE	BY-PASS ISOLATION	ENCLOSURE	REMARKS
2-ATS-EQ	EQUIPMENT BRANCH	OPEN	480/277, 3 PH, 4W	4	400	NO	NEMA 1	
2-ATS-ES	LIFE SAFETY BRANCH	OPEN	208/120, 3 PH, 4W	4	100	NO	NEMA 1	
59-ATS-EQ	EQUIPMENT BRANCH	OPEN	480/277, 3 PH, 4W	4	800	NO	NEMA 1	
102-ATS	EQUIPMENT BRANCH	OPEN	208/120, 3 PH, 4W	4	150	NO	NEMA 1	

TRANSFORMER SCHEDULE

NUMBER	PRIMARY VOLTAGE		SECONDARY VOLTAGE		PHASE	ROOM NUMBER	KVA SIZE	K RATING	MOUNTING	SERVED FROM	REMARKS
	(L-L)	(L-N)	(L-L)	(L-N)							
102-T1	480		208	120	3	102	500		FLOOR	102-MSB	SEE 6/E3
2-TES	480		208	120	3	2-TUNNEL	30		FLOOR	102-MSB	SEE 6/E3
2-TEC	480		208	120	3	2-TUNNEL	30		FLOOR	102-MSB	SEE 6/E3



1 E4 ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

GENERAL NOTES:

1. ALL DISCONNECTS, TRANSFER SWITCHES, TRANSFORMERS AND SWITCHBOARDS TO BE LABELED PER THE SPECIFICATIONS. LABELS TO INCLUDE BRANCH (EQ,EC,ES), BUILDING NUMBER, AND VOLTAGE.

PLAN NOTES:

(1) REMOVE THE N–G STRAP WITHIN THE EXISTING SWITCHBOARD. ADJUST THE ELECTRONIC TRIP MAIN BREAKER PER THE SETTINGS PROVIDED BY THE PROJECT ENGINEER. COORDINATE WITH THE VA COR.

(2) REMOVE THE EXISTING CONDUIT AND CONDUCTORS AND PULL BOX INSIDE THE VAULT. REUSE EXISTING CONDUITS FROM THE TRANSFORMER TO BUILDING, PROVIDE NEW CONDUCTORS.

(3) PROVIDE A 150/3 CIRCUIT BREAKER IN 4–SWBD–A.

(4) ROUTE THE NEW 400A FEEDER FROM THE EXTERIOR BUILDING 2 TRANSFORMER TO SWITCHBOARD 2EQ VIA NEW 2–DS4/2–ATS–EQ. SEE E2 FOR ROUTING.

(5) STUB OUT (4) 3 INCH CONDUITS AND (1) 1 INCH CONDUIT (START SIGNAL) FOR FUTURE KITCHEN, SEE E2.

(6) PROVIDE 2#12+#12 GROUND IN A 1 INCH CONDUIT TO THE GENERATOR CONTROL PANEL VIA THE JUNCTION BOX IN BUILDING 102 FOR 'START SIGNAL'. ALSO INSTALL REQUIRED CABLES FROM EACH TRANSFER SWITCH TO THE ATS ANNUNCIATOR IN BUILDING 102. SEE SECTION 26 36 23 FOR REQUIREMENTS.

(7) SEE DETAIL 2/E5.

(8) CONNECT TO A 100/3 IN MSB–2, PROVIDE NEW BREAKER.

(9) TO AN EXISTING 100/3 IN MSB–2.

(10) STUB OUT (1) 1 1/2 INCH CONDUIT AND (1) 1 INCH CONDUIT (START SIGNAL) FOR FUTURE KITCHEN LIFE SAFETY FEEDER. SEE E2.

(11) PROVIDE BARRIERS IN THE SWITCHGEAR TO SEPARATE THE ESSENTIAL BRANCH WIRING FROM THE EQUIPMENT BRANCH WIRING. SEE 2/E6 AND 3/E6.

(12) PROVIDE PREPARED SPACE WITH BUSSING KITS FOR FUTURE CIRCUIT BREAKERS NOTED.

(13) SEE DETAIL 1/E6.

(14) BREAKERS TO BE SELECTIVELY COORDINATED WITH BREAKERS IN 102–MSB.

(15) BREAKER TO BE SELECTIVELY COORDINATED WITH DOWNSTREAM BREAKERS IN 102–LSB AND UPSTREAM 800/3 IN 102–MSB.

(16) SEE DETAIL 7/E3.

(17) THE LABELS INDICATED ON THE DISCONNECT SWITCHES ARE TO LOCATE ON THE PLAN DRAWINGS ONLY. CONTRACTOR TO LABEL DISCONNECT AS TO WHAT IT FEEDS. EXAMPLE: 2–DS2 SHOULD BE LABELED 'TRANSFORMER 2–TEC'. VERIFY ALL LABELING WITH VA COR.

(18) PROVIDE JUNCTION BOX ABOVE 102–MSB TO EXTEND THE EXISTING FEEDER TO THE 1200 AMP BREAKER IN 102–MSB.

(19) DISCONNECT FEEDER FROM 480 VOLT SWITCHBOARD ON BUILDING 101 AND ROUTE TO NEW JUNCTION BOX.

100% CDs - FOR CONSTRUCTION

Revisions:	Date

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PRINTED NAME: MICHAEL A. BERGER
SIGNATURE:
DATE: 3/30/2012 REG. NO. 40294

Drawing Title: ELECTRICAL ONE-LINE DIAGRAM; ELECTRICAL SCHEDULES
Approved Project Director:
Project Title: Building 102; Building 4 Generator Replacement
Location: St. Cloud VA Health Care System
Date: March 30, 2012 | Checked: MAB | Drawn: TLP
Project Number: 656-11-211
Building Number: 102
Drawing Number: E4
Dwg. 10 of 12

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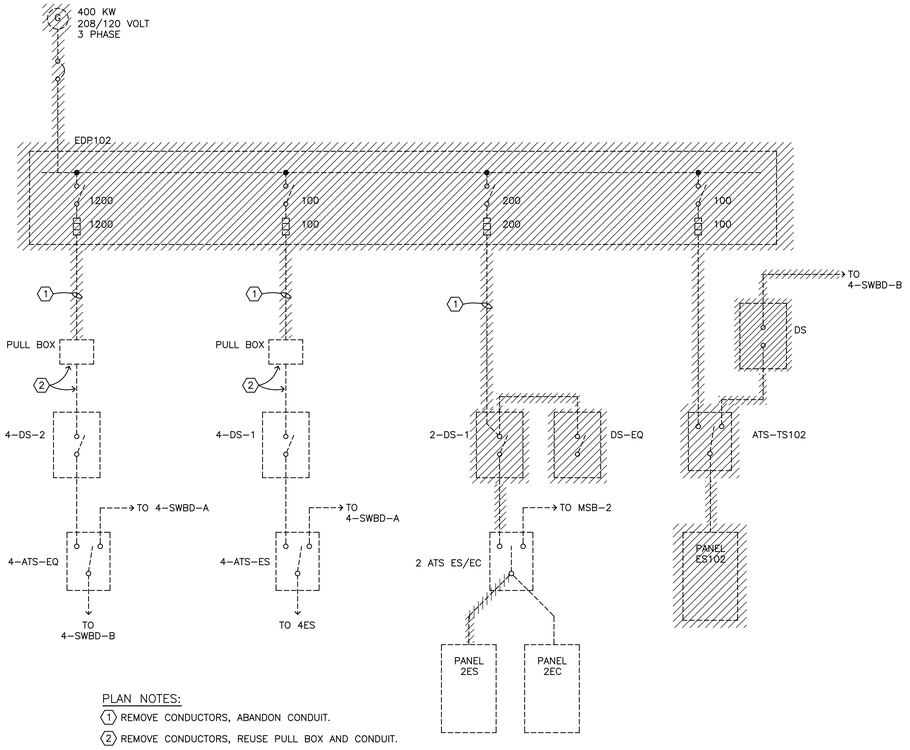
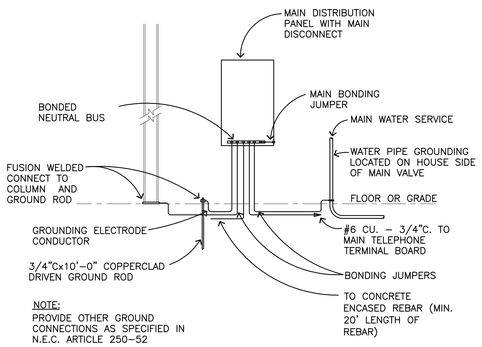


PLAN NOTES:

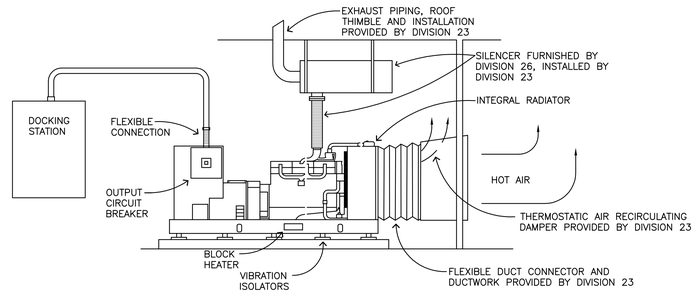
(1) REMOVE CONDUCTORS, ABANDON CONDUIT.

(2) REMOVE CONDUCTORS, REUSE PULL BOX AND CONDUIT.

1 E5 EXISTING BUILDING 102 ONE LINE DIAGRAM – ELECTRICAL DEMOLITION
NO SCALE



2 E5 SYSTEM GROUND DETAIL (MAIN DISTRIBUTION PANEL)
NO SCALE



3 E5 ENGINE GENERATOR SET DETAIL
NO SCALE

100% CDs - FOR CONSTRUCTION

Revisions	Date

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PRINTED NAME: MICHAEL A. BERGER
SIGNATURE:
DATE: 3/30/2012 REG. NO. 40294

Drawing Title: EXISTING BUILDING 102 ONE-LINE DIAGRAM - ELECTRICAL DETAILS	Project Title: Building 102 Building 4 Generator Replacement		Project Number: 656-11-211
Approved: Project Director	Location: St. Cloud VA Health Care System		Building Number: 102
	Date: March 30, 2012	Checked: MAB / Drawn: TLP	Drawing Number: E5 Dwg. 11 of 12

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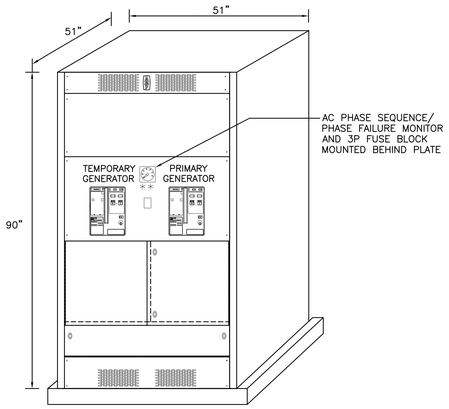
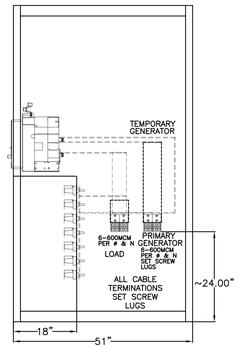
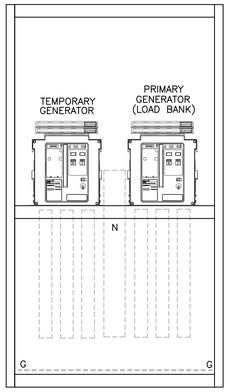


FRONT ELEVATION



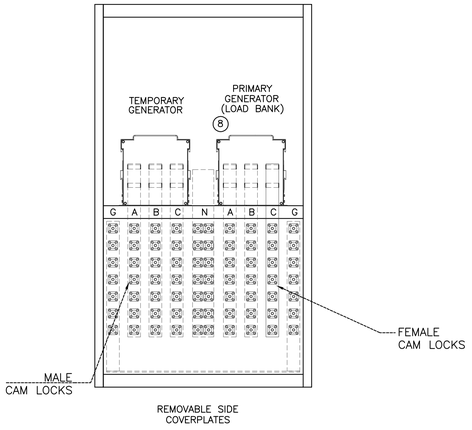
RIGHT SECTION VIEW

SHOWN WITH PLATES REMOVED
SHOWING LUG PAD LOCATIONS



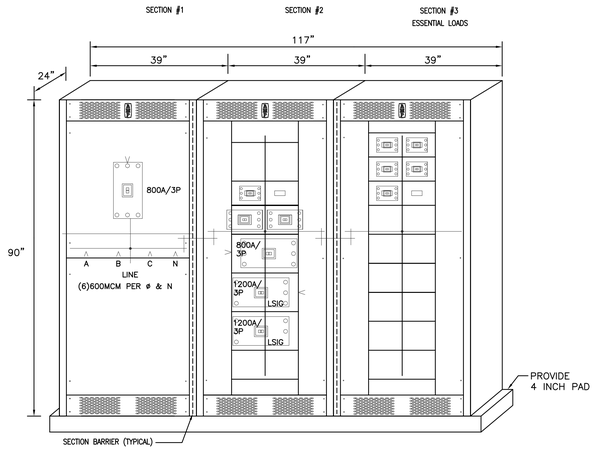
FRONT VIEW

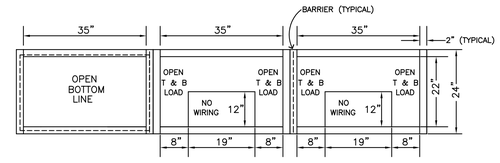
SHOWN WITH PLATES REMOVED



FRONT VIEW

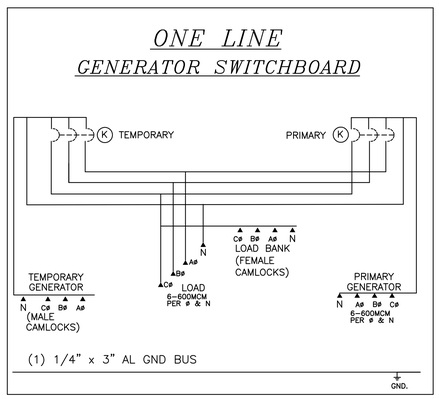
SHOWN WITH PLATES REMOVED





2/E6 102–MSB SWITCHGEAR ELEVATION
NO SCALE

ONE LINE
GENERATOR SWITCHBOARD

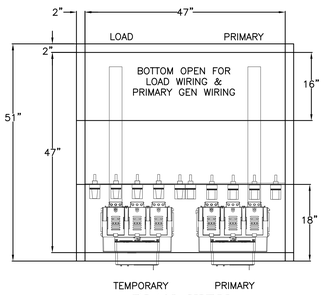


CONNECTIONS SHOULD BE MADE BY QUALIFIED PERSONNEL
CONNECTIONS MUST BE MADE IN THE FOLLOWING ORDER

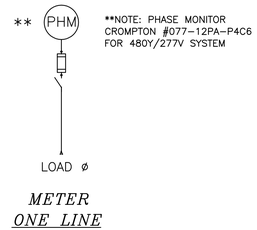
1ST GROUND
2ND NEUTRAL
3RD A,B & C PHASES ⑧

DISCONNECT IN REVERSE ORDER

NOTE:
GENERATOR SWITCHBOARD TO BE AMERICAN MIDWEST POWER (AMP) MODEL FCB2525DSS.

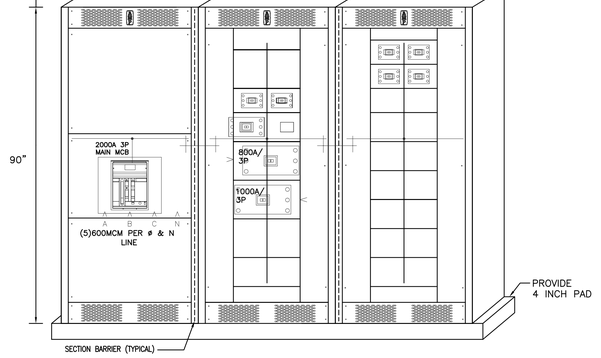


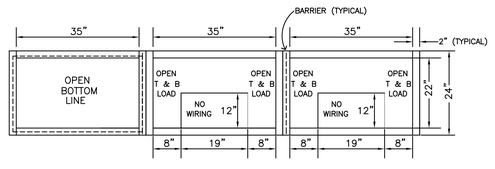
PLAN VIEW



**NOTE: PHASE MONITOR
CROMPTON #077-12PA-P4C6
FOR 480Y/277V SYSTEM

METER
ONE LINE





3/E6 102–LSB SWITCHGEAR ELEVATION
NO SCALE

1/E6 GENERATOR DOCKING STATION #1 DETAILS
NO SCALE

102–MSB AND 102–LSB

CONSTRUCTION:
1. DEADFRONT, FREE STANDING
2. FRONT ACCESSIBLE
3. NEMA 1
4. 12 GAUGE STEEL BOLTED FRAMEWORK
5. PAN FORMED 14 GAUGE SHEET STEEL COVERS
6. PROVISIONS FOR FUTURE SECTIONS TO ADD ON

IN COMING FEED:
1. CABLE IN CONDUIT

BUS BAR:
1. COPPER (SILVER PLATED)
2. 1,000 AMPS PER SQUARE INCH
3. 65,000 AIC

BARRIERS:
1. 1/8 INCH FIBER LAMINATE
2. 16 GAUGE GALVANIZED STEEL
3. PROVIDE BETWEEN ALL SWITCHBOARD SECTIONS

PAINTING:
1. VAPOR DEGREASED, BONDERIZED, ACID ETCHED
2. POWER PAINTED, OUTSIDE
3. ASA 61 GRAY

CODES AND STANDARDS:
1. NATIONAL ELECTRICAL CODE (N.E.C.)
2. UL 891 (SWITCHBOARDS)
3. SUITABLE FOR SERVICE ENTRANCE (SUSE) SWITCHBOARD

SYSTEM CONFIGURATION:
1. 2000 AMPS, 208Y/120 VOLTAGE, 3 PHASE, 4 WIRE
2. BREAKERS TO BE SELECTIVELY COORDINATED AS REQUIRED BY NEC 517

MANUFACTURER:
1. SWITCHBOARDS TO BE MANUFACTURED BY AMERICAN MIDWEST POWER (AMP) OR EQUAL PER SECTION 26 24 11.

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Drawing Title: ELECTRICAL DETAILS
Approved: Project Director
Project Title: Building 102 Building 4 Generator Replacement
Location: St. Cloud VA Health Care System
Date: March 30, 2012 | Checked: MAB | Drawn: TLP
Project Number: 656-11-211
Building Number: 102
Drawing Number: E6
Dwg. 12 of 12

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